Space Weather Forecast

Issued on Friday, 22 December 2023 at 01:23 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

Space Weather Forecast Headline: Chance of isolated Moderate flares throughout.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Moderate, with two Moderate class flares observed from the complex region in the southwest quadrant close to the western horizon. The first flare produced a CME (coronal mass ejection) which has been analysed and modelled and is not expected to be Earth directed. The second Moderate class flare appears to have also produced a CME, and this is currently expected to also miss Earth. However, analysis and modelling will be undertaken to confirm this. AR3529 in the southeast quadrant is the largest and most complex region on the disc, but has only produced Common-class flaring. A line of three moderately large and complex regions across the northern hemisphere have all shown limited evolution and some Low solar activity. These are the most significant of nine regions on the visible disc, with the remaining regions either weak or inactive.

Solar Wind / Geomagnetic Activity: Solar wind speeds have declined from slightly elevated to ambient levels as the recent fast solar wind eases. Total magnetic field strength has been weak, with the important north-south component only varying weakly. Resultant geomagnetic activity was largely Quiet to Unsettled.

Energetic Particles / Solar Radiation: High energy proton flux has been at Background levels with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Low with a chance of becoming Moderate with isolated Moderate flares.

Solar Wind / Geomagnetic Activity: No Earth-directed CMEs are currently forecast. Earth has now left the solar wind enhancement. A further solar wind enhancement is forecast to connect with the Earth today (22 Dec) with speeds potentially reaching elevated levels before declining again during day 3 (24th Dec). Geomagnetic activity is expected to remain largely Quiet to Unsettled during the period. There is a chance of Active and a slight chance of a Minor Storm interval upon the uncertain connection to a high speed stream today.

Energetic Particles / Solar Radiation: Solar radiation storms are considered very unlikely.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	10	1	1	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	50	50	40	40
Very Active	R3 to R5 X	No	5	5	5	5

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	10	10	10	10
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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